



STATE OF MICHIGAN  
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENT

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January 19, 2010

**Mike Smolinski**  
**Land and Water Management Division**  
420 Fifth St.  
Gwinn, MI 49841

Dear Mr. Smolinski:

SUBJECT: WOODLAND ROAD LLC, 09-52-0086-P

Michigan Department of Natural Resources and Environment (DNRE) Fisheries Division staff, Jessica Mistak, George Madison, and Darren Kramer, has reviewed Permit Application 09-52-0086-P for Woodland Road LLC. The applicant proposes to construct a 22.3 mile long multi-purpose road in Humboldt Township that will be open to mining, logging, aggregate industries, and public recreational use. The road will cross the Middle Branch of the Escanaba River, Second River, Koops Creek, Voelkers Creek, Dead River, Wildcat Canyon Creek, Mulligan Creek, Yellow Dog River, and multiple wetland areas. Environmental effects include a loss of 31 acres of wetlands and the removal and reinstallation of numerous culverts and bridges. Various mitigation measures are proposed by the applicant.

Michigan is part of the Northern Great Lakes Region, defined as one of the most densely forested regions in the United States. According to Saunders et al. (2002), roads are the primary cause of habitat fragmentation and reduction in this region. In similar findings, Wheeler et al. (2005) found that the greatest damage to aquatic ecosystems is caused when roads are constructed through undeveloped watersheds or, as defined by the applicant, in a "relatively undeveloped area". Although mitigation may be proposed to offset the negative effects of roads, mitigation projects are often costly and unsuccessful due to the multitude of factors by which aquatic organisms are affected (Trombulak and Frissell 2000). As a result, measures should be taken to limit road construction in undeveloped areas.

Roads are typically built within remote areas to promote activities such as logging or mining and, although these activities may depend on roads, we know that the effects of roads on aquatic habitat and species are unequivocally negative and widespread (Gucinski et al. 2001). For example, when a road is constructed, the resulting changes in land negatively affect the biotic

integrity of aquatic systems through sedimentation, creation of barriers, and changes to the physical and chemical environment (Allan and Flecker 1993, Trombulak and Frissell 2000). Roads change the hydrology of a watershed by altering surface water flow and causing changes in runoff patterns (Jones et al. 2000; Gucinski et al. 2001; Wang et al. 2001; 2003), particularly in small watersheds (Jones and Grant 1996). Roads may also cause changes to stream channel

morphology through atypical runoff patterns that cause downcutting, headcutting, and widening (Wemple et al. 1996; Trombulak and Frissell 2000; Wheeler et al. 2005). According to Trombulak and Frissell (2000), given that changes to channel morphology are often triggered by infrequent precipitation events or floods, it may take many years to realize the full effects of road construction.

The consequences referenced above are acknowledged by the applicant on page 53 of the Supporting Documentation, which states that a new or upgraded road will result in increased vehicular traffic in a relatively undeveloped area, some level of impact on aquatic resources, and habitat fragmentation.

**Based on our review of the permit application, we offer the following comments and recommendations:**

### **Road Construction and Maintenance**

Use and maintenance of roads contributes several chemical pollutants to the aquatic environment, including heavy metals and salts (Forman and Alexander 1998). These pollutants are carried to streams where they accumulate in sediments and biota and often move downstream for considerable distances (Gjessing et al. 1984; Wheeler et al. 2005). Additionally, the risk of toxic chemical spills is increased at road-stream crossings. According to Wheeler et al. (2005), accidental releases during transportation of hazardous materials occur frequently and are especially damaging to rare species or species with complex life histories, such as freshwater mussels.

It is unclear what process was used to determine whether existing roads were of adequate width and alignment to meet safety design standards. In order to better understand the need to either construct a new road or upgrade the existing road, we ask that the applicant provide additional information on the design standards used for the proposed Woodland Road.

A road maintenance plan should be provided to the DNRE for review. This plan should include measures to avoid introduction of sediment and chemical pollutants at road stream crossings.

### **Sedimentation**

According to Meehan (1991), roads contribute more sediment to streams than other land management activities. Sediment inputs occur not only through road construction, but also at road crossings. Sedimentation can also occur through catastrophic mass failure of road cuts and through runoff during storm events (Gucinski et al. 2001). The input of sediment at high concentrations may impair aquatic productivity and kill aquatic organisms (Newcombe and Jensen 1996). Increases in fine sediment such as sand have been shown to negatively affect fish through reduced fry emergence, juvenile densities, and carrying capacity (Gucinski et al. 2001).

To reduce sedimentation, we recommend that the applicant follow Sustainable Soil and Water Quality Practices on Forest Land, authored by the DEQ and DNR in 2009  
[http://www.michigan.gov/documents/dnr/IC4011\\_SustainableSoilAndWaterQualityPracticesOnForestLand\\_268417\\_7.pdf](http://www.michigan.gov/documents/dnr/IC4011_SustainableSoilAndWaterQualityPracticesOnForestLand_268417_7.pdf).

Additionally, we recommend incorporation of the following BMPs (Stream Simulation Working Group 2008):

- Ensure that drainage ditches discharge muddy storm runoff to a vegetated buffer area rather than the stream, both during construction and after construction is complete
- Stabilize road fill effectively so that sediment production is minimized, avoid chronic disturbance of road fill during road maintenance, and re-vegetate/re-armor the road when needed
- Outslope road surfaces for drainage wherever possible
- Armor road surfaces where necessary to prevent erosion and sediment transport to streams
- Ensure that stream crossings do not have diversion potential
- Anticipate and prevent maintenance problems
- Monitor roads and stream crossings at regular intervals after large storms and promptly remedy problems

### **Road Crossings**

Road stream crossings, such as culverts, often act as barriers to the passage of aquatic organisms. The proposed road will cross four watersheds including the Escanaba River, Michigamme River, Dead River, and Yellow Dog River, and has the potential to significantly affect aquatic function. As part of the permit, the applicant proposes to remove 61 existing culverts and install 116 culverts (99 for equalization/runoff and 17 at stream crossings). The applicant also proposes to remove existing bridges on the Dead River, Mulligan Creek, and Yellow Dog River and construct bridges on the Middle Branch of the Escanaba River, Second River, Koops Creek, Dead River, Mulligan Creek, and Yellow Dog River.

In our review of the data, we have several concerns with the collection of information for the road stream crossings. In particular, the data in Section 14 of the application does not specify at what habitat feature average stream widths were taken (riffle, pool, etc.) or if data was collected outside of the influence of the road right-of-way. This information is needed to evaluate whether the design criteria for the road stream crossings is accurate. Additionally, references are made throughout the document of bridges that will be constructed on the Middle Branch of the Escanaba River, Second River, Koops Creek, Dead River, Mulligan Creek, and Yellow Dog River. Upon closer review of the information in Section 14, it appears that the structures listed as bridges are actually culverts; therefore, do not inherently provide the same level of resource protection that may be afforded by bridges.

To reduce potential negative effects at road stream crossings, we recommend that the applicant follow the Stream Simulation (Stream Simulation Working Group 2008) approach to mimic the slope, structure, and dimensions of the natural streambed to provide passageway for all aquatic species. Ideally, road stream crossings should be sized to match or, if a bankfull bench can be constructed inside the crossing, exceed bankfull width. Road stream crossings should be located at riffles to maintain stream stability and culvert streambed material should match what is found naturally both upstream and downstream of the road stream crossing.

To properly follow Stream Simulation methodology in designing road stream crossings, the following survey information is needed from the applicant:

- Average bankfull width at three different riffles located outside of the road influence. The riffles used may be upstream or downstream of the proposed crossing and must be in a section of the river that has the same discharge as the proposed crossing location (i.e., should not be upstream or downstream of tributaries or other water sources). This information will be used to guide the width of the proposed road stream crossing.
- A longitudinal profile conducted from an upstream riffle that is outside of the road influence, through the proposed crossing location, and to a downstream riffle that is outside of the road influence. This information will be used to determine slope of the culvert and appropriate culvert depth.

In several instances, the applicant proposes to relocate an existing road stream crossing and restore the streambed, banks, and wetlands to offset the impacts of the new crossing. Restoration plans for these sites should be provided for DNRE review. Similarly, the applicant proposes stream relocation to allow for minor entrance channel construction at road stream crossings. More information, including stream relocation plans, should be provided to the DNRE for review.

### **Part Two: Environmental Assessment**

Michigan's list of Threatened and Endangered Species was updated on April 9, 2009. The applicant's data should reflect this revised list.

The applicant states on page 63 that "Existing data on stream habitat, macroinvertebrate populations, and fish species in the larger streams on the project are not available or are not recent. MDNR has collected stream data for many streams in Michigan, but recent surveys are few and do not exist in the locations where the proposed Woodland Road will cross the streams." On the contrary, DNRE Fisheries Division has completed the following surveys in the vicinity of the proposed project and this information should be incorporated into the permit application:

- Koops Creek- 9/12/1991
- Middle Branch of the Escanaba- 9/4/1991 and 9/12/1991
- Second River- 9/12/1991, 9/5/1995, 7/12/2000, 8/5/2008

In the collection of baseline aquatic data, the applicant selected a site on the Second River. Unfortunately, this site "was not electro-fished due to the stream being unwadable due to deep water and a silty bottom". The existing DNRE surveys for this site document the capture of brook trout and suggest that this site appears to offer some of the best trout water of any part of the Upper Escanaba River system. Additionally, this site has sufficient gravel to provide trout with suitable spawning substrate and documented recreational angling activity.

Furthermore, it is not clear if historical DEQ surveys were reviewed to obtain information on fish, aquatic macroinvertebrates, and stream habitat. We are aware of at least one survey conducted by DEQ that pertains to this project- DEQ Survey of the Escanaba River, August

2000. Historic DEQ surveys should be reviewed and incorporated into the permit application.

If you have any questions about this matter, please contact me at 906-249-1611 ext 308 or [mistakj@michigan.gov](mailto:mistakj@michigan.gov). If you wish to contact me in writing, my address is:

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Sincerely,



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